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2010 FALL ISSUE
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A MESSAGE FROM MONTANA'S CHIEF BUSINESS DEVELOPMENT OFFICER

Welcome to our Fall 2010 issue of Montana Business & Technology magazine, a publication designed to highlight the people, companies and products that are spurring the growth of Montana's increasingly technology-based economy.

The past 18 months have been challenging for both the U.S. and global economy, but I am glad to report that throughout this time, thanks to the aggressive economic development policies of Governor Schweitzer, Montana has remained in the forefront of economic activity in the nation, better than most other states. Our unemployment rate remains more than 2% under the national average, we remain the 8th fastest growing economy and have the 8th best business climate in the nation. The article on the Montana economy (p. 19) highlights some of the ongoing strengths of the Montana economy.

The economic numbers found in that article underscore the continued vitality of our private sector as well as the impact of Governor Schweitzer's prudent and disciplined fiscal policies and management of our state government and our state economy. In a nation of state's drowning in red ink, debt that can be offset only by Draconian spending cuts and/or tax increases, Montana remains one of only two state governments "operating in the black". Businesses need to reflect on the question of when their state?s red ink will rub off onto their business.

With, hopefully, the worst national and international threats of the "great recession" behind us, the nation partially on the rebound (though not as strong as we all would like), and Montana continuing to be dynamic, our focus in this fall issue is on the "next generation" of industries and innovation that will be the source of Montana's continued prosperity in the future. In this respect, Montana has the opportunity to become one of the national leaders in the Clean Tech economy by aggressively supporting the development of a set of industries that take advantage of our natural resources and our private industry expertise.

Also, read about the entrepreneurs who are starting up new companies (p. 18) despite the national economic challenges, the women who are playing a critical role in the growth of our technology economy (p. 14) and how the Flathead region is becoming a center for high-tech entrepreneurs (p. 6). The names you read may not be household names today, but they are the leaders of the future.

As always, we welcome your comments, suggestions, and story ideas.

Please feel free to contact me at business@mt.gov.

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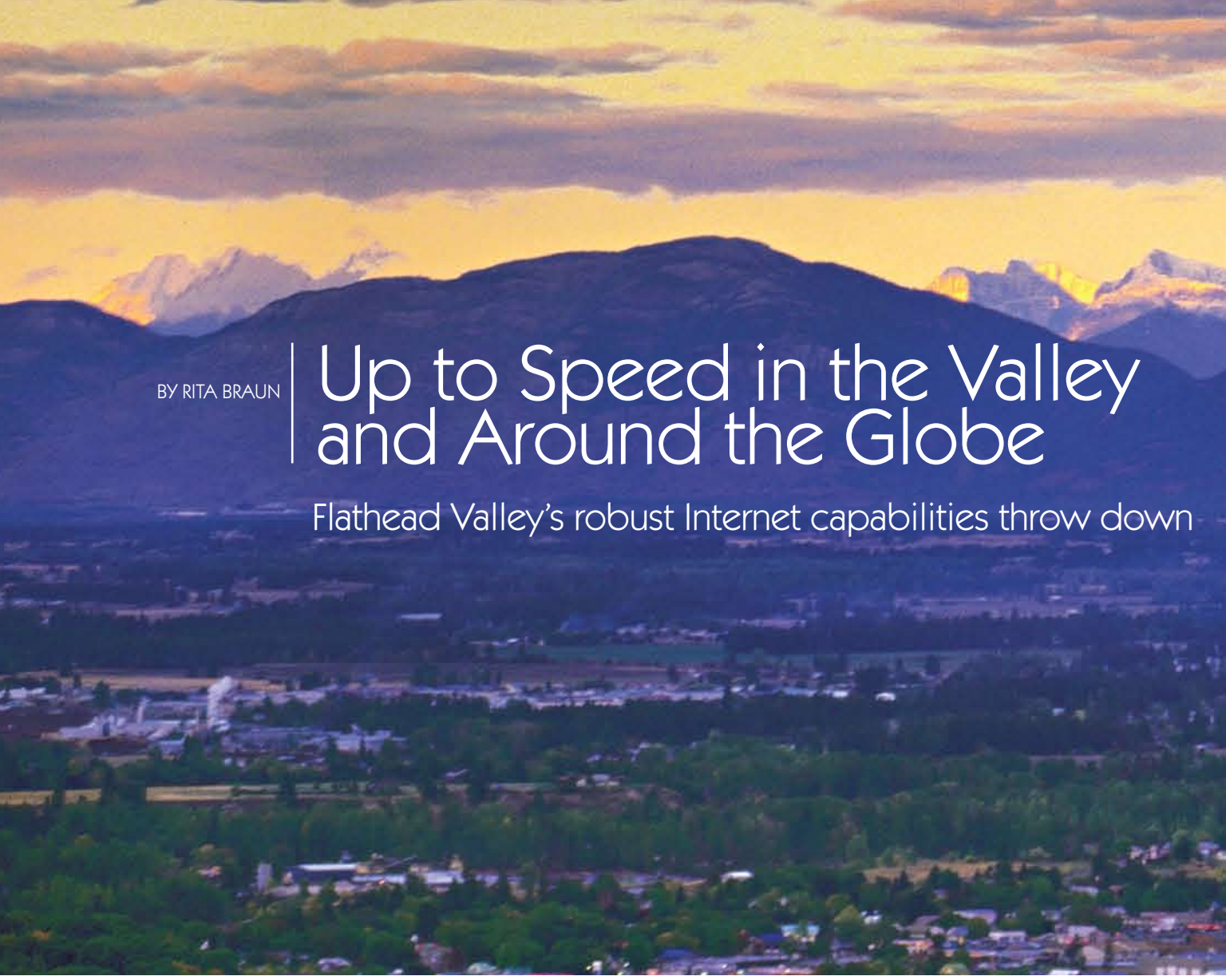


BY RITA BRAUN

Up to Speed in the Valley and Around the Globe

Flathead Valley's robust Internet capabilities throw down

To associate high tech with the Flathead Valley, "It's unintuitive," says Todd Twete, VP of Sales and Marketing at Merlin Information Services located in Kalispell, MT. "But high tech is here, in pockets throughout the Valley."

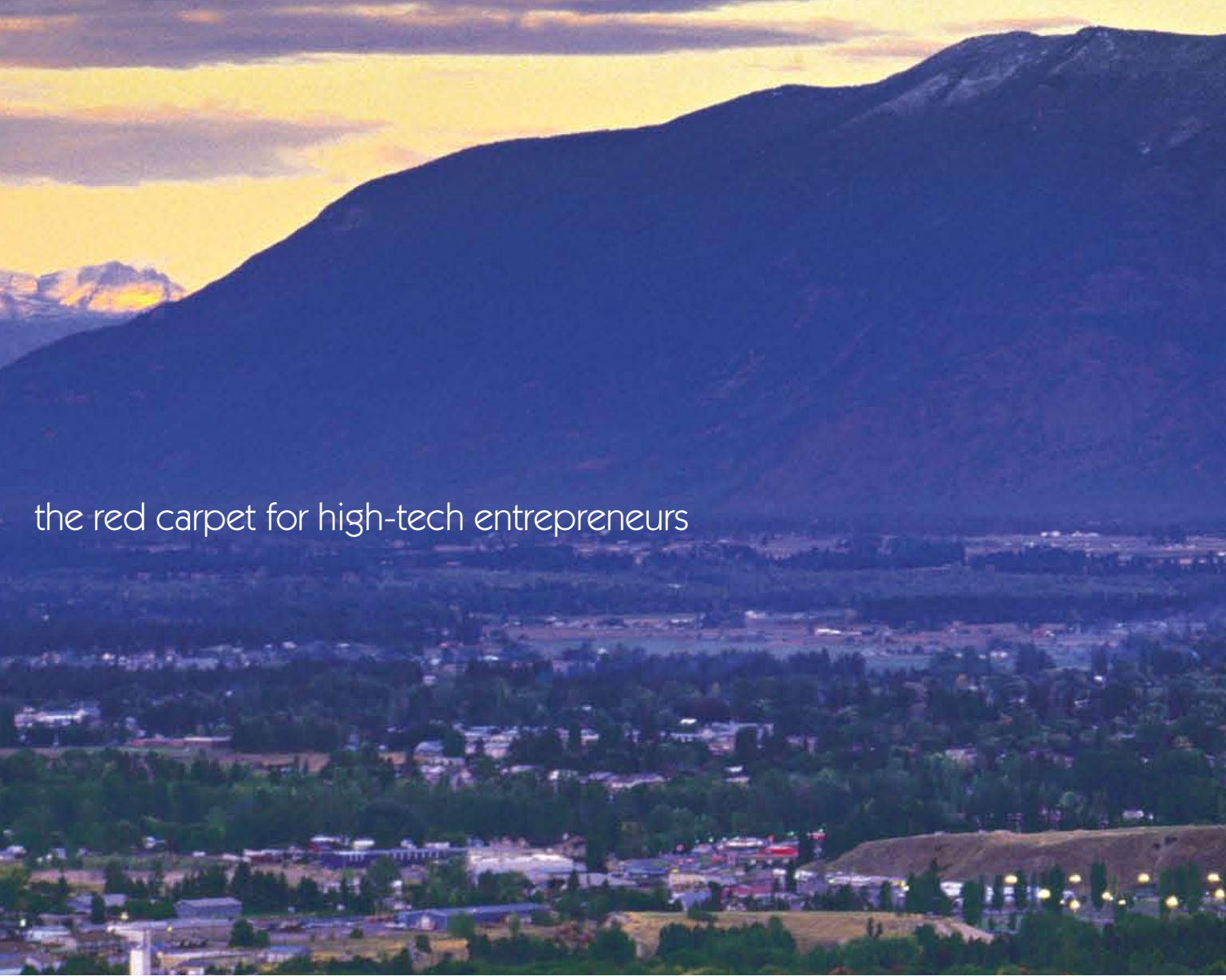
"We do business there, but we're here!" says Keith Brown, CIO for National Flood Services, Inc., referring to doing business in Kalispell, but serving a nation-wide customer base, located primarily in Florida, Texas, and California.

Characterizing Flathead Valley's high tech business environment is a sense of wild and wooly creativity, born out of the determination and grit that precedes any entrepreneurial success. We've got lots of roads less traveled around here, maybe some never traveled at all. Both suit the area's high-tech entrepreneurs who have staked out their own brands of success and adventure.

What is high-tech anyway?

It covers so much ground. After pondering all the ways science is applied to exploration, industry, commerce, and the arts, you might observe three basic things going on:

- bringing something **totally new** into existence
- integrating things that already exist **but never used together**
- integrating **in new ways** things that already exist and are used together



the red carpet for high-tech entrepreneurs

If you tour Flathead Valley high-tech businesses, you'll observe all three of those things going on.

Let's take a look at some of them in action. But first . . .

Broadband

A conversation about high-tech activity in Flathead Valley can't begin without first mentioning its fiber optic capabilities. Bandwidth-intensive businesses that retrieve and transmit massive amounts of stored video, voice, and data files find the area's broadband capabilities a deal closer—from wishing you could live and work where you vacation in the Flathead to actually doing so.

Ninety percent of all Flathead Valley businesses are wired for Ethernet capabilities. CenturyLink, one of the area's broadband providers, offers more fiber optic bandwidth, per capita, than anywhere else in the country.

"We've got big pipes here," says David Pickeral, founder and owner of Artist New Media located in Whitefish, provider of video distribution and marketing services through mobile phones, web TV, social networks, and the internet. "Video production

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and distribution from remote locations suddenly becomes cost-effective. You've got virtual editing rooms now. I can work with someone in New York as if we were in the same production room." What used to cost David $125,000 to produce now costs 90 percent less.

Data Storage and Transmission

Private investigators, debt buyers, real estate investors, and reunion committees all want to do the same thing: find people. With proper credentials, accessing public and private information about people and their whereabouts and assets is easy; keeping that information up-to-date, accurate, and very searchable, is not.

Merlin Information Services serves professionals who conduct investigative work to find people, businesses, and assets through public records and other databases. In seconds, Merlin's software can retrieve, format, and transmit specific information about someone by accessing 60 terabytes of data stored in Merlin's two data centers—60,000 times per hour. To put that into perspective, 60 terabytes is equivalent to six U.S. Libraries of Congress— 188 million items, such as books and manuscripts, not including video, data, and audio collections, or the Library's rare book collection, the largest of its kind in North America.

The sign "It's a Home, Not a Policy" hangs front-and-center in the training room of National Flood Services, the Kalispell-based processor of flood insurance policies and claims for insurance companies. Acting as insurance companies' "flood department," this paper- and data-intensive company is a leader in data storage and transmission technology.

National Flood Storage Data storage at National Flood

While customer service is National Flood's primary differentiator among its competitors, getting the insured back up and running wouldn't be doable without capabilities to transmit and store massive amounts of data. Using the Library of Congress comparison, National Flood transmits an amount of data equivalent to four libraries (40 terabytes of data), each day.

For context, during peak loads of data retrieval and transmission, 3500 insurance agents access National Flood's policy and claims processing system all at once. Over the course of a year, the company digitally images sixteen million pieces of paper, not counting incoming mail, which comprises 21 percent of the mail in National Flood's zip code.

"Making flood insurance work isn't easy," says Keith Brown. Legalese aside, presenting policies and claims in plain language takes harmonious integration of "flood map information, various building types, community flood-mitigation efforts, and dealing with a government-run program into an understandable formula," explains Keith. "That's the secret sauce we use to sell insurance coverage."

Alternative Energy

Michael Smith, President Algae AquaCulture Technologies, examines an algae culture that will be used as a feedstock for producing energy and fertilizer.

Headlines about inventions that convert waste into cash flow dominate alternative energy publications the globe over. We've got one here in the Flathead. Michael Smith, President of Whitefish-based Algae Aqua-Culture Technologies (AACT), and his colleagues have invented a process for converting woody bio mass to energy. Using algae and a software program based on artificial intelligence, game theory, and behavioral modeling, this alternative energy company integrates existing technologies in new ways to accelerate energy production, where one of the byproducts is organic fertilizer.

In partnership with F.H. Stoltze Land and Lumber Company in Columbia Falls, AACT will scale up its production process of organic fertilizer. Stoltze will supply the woody biomass (wood chips, tree limbs) for burning and generating heat for its processes as well as AACT's. AACT will supply the Green Power House™—the closed-loop bioprocessing system that ingests carbon dioxide waste from the burn, harvests algae, and

Dr. Doug Dolan of Dolan Family Vision in Kalispell conducting an eye exam using WaveForm OWR Refraction

produces organic fertilizer. During scale up the partners will +determine how much biomass can produce heat and fertilizer and at what cost.

Should AACT ultimately commercialize its Green Power House™, the ailing timber industry could find itself with a new raison d'être.

Corrective Lenses

Which one is better, one or two?

That's the eye doctor asking you during your eye exam which image you can see better, even though they both look exactly the same. So you guess. And after ten or fifteen minutes of that, the doctor writes your subjective-based prescription for corrective eyeglass lenses.

Enter wave front optics. In about 30 seconds your eye exam is over and your lenses have been ordered. Completely eliminating the guessing component, the manufacture of those lenses is based on 12 data sets. What you get is a far more accurate set of lenses and better vision.

For years astronomers have used wave front optics to correct imperfections in telescope lenses. Today, LASIK surgeons use wave front optics to modify the shape of the cornea for surgically correct vision. And recently, Stephen Dunn, founder of WaveSource Inc. based in Kalispell, began commercializing the use of wave front optics for manufacturing contact lenses and conducting eye exams for prescription eyeglass lenses.

Using his copyrighted Optimized WaveFront Refraction (OWR) software, Stephen uses 12 data sets to map how light is refracted off your retina. This information is used in Stephen's patented process to make multifocal contact lenses, similar in concept to the multiple lens powers that bifocal and trifocal eyeglasses provide.

WaveSource's target markets? Baby boomers, of course. And because the device that runs OWR software is simple and easy to use—it requires only 30 minutes of training—India, China, and South America are the huge growth markets.

So far, Stephen works with six manufacturers of the currently available eye exam devices, or WaveFront Refractors, to install his OWR software. It enables the devices to formulate eye exam prescriptions and multifocal contact lens designs in seconds. "The game changer," he says, "is that through partnering with our manufacturers, these devices are now available for less than $10,000 compared to the $45,000 to $75,000 historic price tag for WaveFront Reactors."

E-Commerce

The ZaneRay Group's website tells you the company develops e-commerce software solutions for businesses seeking a distinctive digital presence. But if you speak with ZaneRay President Reed Gregerson, he'll tell you they're in the business of anticipating clients' futures.

ZaneRay's software developers, many still on board since the company's inception in 1994—the early years of e-commerce—each have 10 to 20 years experience in creating enterprise-wide solutions for sales force automation, supply-chain management, and online commerce. "So when a company says I want XYZ," says Reed, "we can anticipate what they'll need in the future. Our staff is experienced enough to do that. We tell customers that if 'you invest in a dime today, you'll save money in the future because that dime will come back to you several times'."

Moving contrary to their competition where the mantra is "the more you work the more you get paid," ZaneRay partners with clients to develop cost effective but elegant online commerce solutions. "It costs money to do the right thing," says Reed. Doing so pays back.

Reed and his senior developers invested in their clients' futures, too. They created the Z-Foundation, now in its third generation, where blocks of functionality integrate with clients' existing hardware and software, eliminating needs for complete website redesigns. At the same time, the Z-Foundation provides clients with tools to manage their customers' online shopping experiences in ways they know will draw profits and repeat business. Bootstrapped, profitable, and growing by word of mouth since they opened their doors, The ZaneRay Group's business jumped right through the recession. "You pour your love into your work and it pays back."

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Mobile Communications

The remote outback under Montana's big sky, an unlikely place for a high-tech start up, served as Nomad Global Communications Solutions' design and development laboratory. In 2002, Will Schmautz, Nomad President and CEO, and his business partners began moving the area's first responders, such as forest fire fighters, beyond the radio-frequency age by building mobile command-and-control centers that link all response personal to a cutting-edge communications network, on location of the forest fire.

Nomad's mobile emergency call units act as the grand central station of translation. Imagine a group of people, all of whom speak different languages and align with different cultures, arriving on the scene of an emergency unified by a common language. In Nomad's case, the different languages are "spoken" by software, the different cultures liken to equipment, and the unifying common language is its service. For context, a firefighter speaking into a UHF radio can communicate with a federal agency staffer speaking on a cell phone.

Today, Nomad serves an international customer base in government and private businesses with diverse emergency management needs. With every unit that rolls off their production line, Nomad succeeds in getting more hardware and software communicating in unison.

Setting technical innovations aside, business success "comes down to executing a business plan," says Todd Twete of Merlin Information Systems. For Will Schmautz, realizing Nomad Technologies' vision of being the most technically advanced provider of mobile command and control units for disaster response means keeping the company's business plan a living document through weekly updates, corrections, and refinements.

Every person interviewed for this article understands business plans are executed by people, and praised the knowledge and dedication of their employees. No wonder. People want to live and work here. That they're motivated to become more skilled, advance their careers, and contribute to their companies' successes is well-known throughout the Valley.

Several companies presented here are moving into their second and third stages of technical innovations and corporate earnings. Supporting all economic development in the Flathead Valley, Kellie Danielson, President and CEO of Montana West Economic Development, knows the key role these companies play in the local economy. "They have the capacity for internal growth and are successful in attracting talent to the area," says Kellie. "After all, who wouldn't want to work for a successful growth-oriented business surrounded by the Rocky Mountains and the clearest water in the nation? The broadband speed available in the Flathead mirrors what is available in large metropolitan areas. Big-city services and talent with a small-town culture."

A critical mass of high-tech talent and research and development facilities is yet to form in the Flathead. Many high-tech employers recruit hard-core technical talent from out of the area. Yet employees who include proximity to natural beauty as a job-acceptance criterion "know exactly what they're getting into when they accept jobs here," says ZaneRay's Reed Gregerson.

In that regard, this area's remoteness is the attraction and the advantage. The Flathead Valley high-tech entrepreneurs knew that from the get-go. It's why they came here in the first place. MTb&T

BY DAN BROUN

TECHNOLOGY TRANSFER AT THE UNIVERSITY OF MONTANA – IT'S A TEAM

Every year the University of Montana turns out thousands of bright-eyed young people eager and qualified to enter the state's workforce. But graduates aren't the only export emanating from Missoula these days. Under the guidance of a new director, the university's technology transfer office is helping companies use university research to bring products to market and in some cases spinning out new companies.

Joe Fanguy came on board as director of the office in October of 2009 after serving as Assistant Director of Technology Transfer for Mississippi State University. Fanguy said the opportunity in Missoula excited him.

"I was looking for opportunity to build a program," Fanguy said. "Coming from a rural state such as Mississippi, I saw a lot of similarities and challenges in Montana . I also saw a lot of activity here at the university now that we are over $60 million in research."

In addition to the research activity, the university shows impressive in the bioscience field. UM's pharmacy school is consistently highly ranked and expertise in neuroscience has led to some exciting opportunities, including a relatively recent technology transfer success story—Sinapis Pharma.

Sinapsis grew out of the work of Dr. David Poulsen, a neuroscientist at UM. Poulsen combined the research developed at the university with the involvement of a local hospital, and, with assistance of the technology transfer office spun out a new company that uses technology developed at the university. The company represents the first university spin out to reach the clinical trial stage, an important step for UM. Fanguy says collaboration was the key to the success of the Sinapsis venture.

"The lesson learned is that it took a team effort, especially leveraging our partnership with St. Patrick Hospital," Fanguy said.

Another example of the technology transfer office's role comes from a physical therapy assistant professor at UM. Sara Scholtes developed a new type of knee brace and turned to Fanguy's office for guidance on taking the product to market and protecting the intellectual property of the university. With the assistance of the university, Scholtes is now working with a Missoula company and hopes to take the product to market in the coming months.

Establishing relationships with the private sector presents one of the best opportunities to expand the outreach of the university's technology transfer program. This August, Fanguy convened the first meeting of a university commercialization advisory council that will provide input to the office on a periodic basis. The council includes people with knowledge about Montana's business climate and who can provide high level business expertise on commercializing technology-intensive products.

One of the issues that Fanguy hopes the council will provide substantial input on is how to attract investment capital.

"Investment capital is a huge challenge in this state," Fanguy said. "There have not been many venture capital deals in the state although the angel capital environment is much better. We need assistance in helping nurture those investment opportunities."

In addition to providing advice, the council can play the role of getting the word out about all the university can do in terms of generating new technologies and products and moving them to the marketplace.

"The best way to get word out is have examples.," he said. "We are trying to put together our story. We can begin to highlight

EFFORT

what we have available in terms of technology transfer, for instance, our close relationship with St. Patrick. As we begin to collectively tell our story that will facilitate more opportunities for people to get involved."

The multitude of opportunities to get involved shows the multi- faceted aspects of the technology transfer office. Whether it is helping entrepreneurs like Scholtes get their inventions to market or working to spin out new companies like Sinapsis, Fanguy sees the technology transfer office playing a diverse role in crafting the economic development future of the state.

"Tech transfer isn't one size fit all type operation," Fanguy said. "Every opportunity takes us on a new path forward. Our job is to help illustrate that and show the private sector that there are multiple ways to get involved." MTb&T

Joe Fanguy, Director of Technology Transfer in the Office of the Vice President for Research and Development pictured in front of historical University Hall.

Women in Technology

Nicole Hagerman, Project Manager

Montana World Trade Center
mwtc.org

As she helped develop the new Montana Clean Technology Alliance this summer, Nicole Hagerman's excitement was palatable.

"Businesses have an amazing opportunity now to redesign the way they operate in terms of products and lifecycles, consumption and waste—everything that was traditional 10 years ago can now be reinvented," said Hagerman.

Hagerman's passion for business development was honed during her years at Overstock.com where she built a sourcing program from scratch to a $35 million-plus international purchasing operation. She also restructured the e-tailer's Worldstock division which works with artisans in developing countries to help them establish sustainable fair-wage businesses.

Hagerman joined the Montana World Trade Center in 2007 and specializes in working with environmental and engineering firms that want to move into international markets.

"Doing business in this flattening world fascinates me. I have a personal passion for people and cultures, and I love how business can bring cultures together. Oftentimes, when there are huge divisions on other issues, business is the only common denominator," she said.

Hagerman continues to consult with Overstock.com in developing environmental and social responsibility strategies, and also shares her expertise by serving on several boards including the UM's Montana Academy of Distinguished Entrepreneurs (MADE), which sponsors a highly competitive business plan competition open to undergrad and graduate students.

"We're pushing to bring technology transfer into that competition. We have some brilliant students here in Montana, and we want to help them focus on new technology and new ways to look across disciplines," Hagerman said.

Marina Dimitrov, Student

America's Top Young Scientist 2009

How would you protect a raw egg during an earthquake?

That was the final of four live science challenges Marina Dimitrov completed last fall to win top honors in the 2009 Discovery Education 3M Young Scientist Challenge.

Called "The Tremor Tower Challenge," the task required competitors to build a structure to protect the egg from a shake table simulating an earthquake.

"The first thing that came to my mind was triangles. They're the strongest structure used for building," explained Dimitrov, a ninth grader at Bozeman High School.

Dimitrov's PVC pyramid cradled the egg and helped her earn the title of America's Top Young Scientist, $50,000 in U.S. Savings bonds and a trip to 3M's global headquarters in St. Paul where she toured the site and talked with scientists.

"It was all inspiring, but if I had to choose, my favorite part of the visit was looking through the electron microscopes. It was especially breath-taking to be able to see the individual atoms of nanogold that I'd made earlier during my tour of the inorganic chemistry lab," she said.

Dimitrov loves doing experiments because, as she puts it, they bring to life the fact that science is everywhere around us. It isn't just theoretical.

She is adamant that all students understand the importance of science.

"I think it is really important to get kids excited about science and technology at an early age because we are the future of this plant. But it's not just that," Dimitrov said. "Kids should get excited because science is exciting! And that's never going to change."

Liz Gundersen, Science Educator

ExplorationWorks, Helena

explorationworks.org

Retired after 23 years as a pediatrician, Dr. Liz Gundersen was contemplating the next phase of her life a few years ago when a friend asked her to mentor the local roll out of TechGYRLS, a national YWCA initiative designed to give girls hands-on experience with technology.

Gundersen found the curriculum fascinating, especially when a course was added on robots.

"I fell in love with robots," Gundersen said.

The YWCA discontinued TechGYRLS but Gundersen found her second calling.

She is now a science educator at ExplorationWorks, an interactive science and culture museum in Helena, where she and fifth-grade teacher Sandy Jones run the museum's Girl-Tech program.

The two also collaborate on other projects geared to expanding science and technology education in Montana.

This spring that collaboration resulted in a four-year $500,000 NASA grant for Montana's Big Sky Space Education: the NASA ExplorationSpace at ExplorationWorks. In addition to bringing in exhibits designed and developed at MIT, the grant enabled the museum to expand its robotics program to reach students from second through twelfth grades.

As far as Gundersen is concerned, the more students exposed to robotics the better.

"I came to robotics late in life, but I found that in doing it for awhile I suddenly stopped crashing my computer because I understood how it works. Getting at how things work—the logic systems that run a computer, what makes gears turn and electric motors go—this is how we teach robotics. It's a huge educational component that I wish was included in every education system," Gundersen concluded.

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People to Watch

Women in Technology continued

Teresa Gunn, Associate Professor
McLaughlin Research Institute

What molecular processes occur when brain cells die from degenerative disease?

Teresa Gunn has been pursuing that question for more than ten years to gain insight into the triggers of Alzheimer's, Parkinson's and other degenerative diseases that attack the brain.

"Even with the neurodegenerative diseases that have been studied for years, we still don't have a very good idea of what is going on in the cells, and you need to find out what is wrong before you can figure out how to fix it," said Gunn, an associate professor at the McLaughlin Research Institute (MRI) in Great Falls.

Gunn is particularly interested in the role of mitochondria, which fuels cellular activity.

"Dysfunction in mitochondria has been associated with almost every form of neuro degeneration," she said.

Gunn's research got a boost this spring when she received a two-year $250,000 grant from the National Institutes of Health's Institute of Neurological Disorders and Stroke. Her new study will explore the potential connection between two genes that areeach associated with degenerative brain disorders and also known to affect mitochondria—and what those findings might reveal about Parkinson's disease.

Before moving to Montana last year, Gunn taught for several years at Cornell University in Ithaca, New York.

"I jumped at the opportunity to be able to focus entirely on research and do it at a world-class research institute located in a beautiful setting," she said.

She also wanted to collaborate with others working in her field.

"Here everyone is focused on some version of neuro degeneration. It's nice to be able to go down the hall and bounce ideas off of people who are thinking about the same things," Gunn said.

When Rebecca Mahurin first heard about the new technology transfer office Montana State University's research faculty had in mind, she fervently wished that she had the resume to apply for the director position. Then she was offered the job.

"That was in 1991, and I learned that no one had the resume then," said Mahurin.

It was a good fit. After earning a PhD in molecular biology at MSU, Mahurin worked for a small medical device pharmaceutical company for a few years as well as served on the board of a science and technology investment alliance.

Under Mahurin's leadership, the T2 office has become a well-traveled bridge between MSU researchers and the state's private sector, and a critical component in building Montana's high-tech sector.

More than 60 percent of new MSU technology has been licensed to Montana companies, resulting in more than 30 start-ups over the last decade and increased opportunities for student internships and well-paying jobs for graduates.

LigoCyte Pharmaceuticals, for example, has licensed six MSU technologies, participates in nearly $15 million in collaborative research with the university and has hired more than half of its staff from the state university system.

"That's the kind of impact on Montana's economy that we want to continue to be a part of," Mahurin said.

Over the years Mahurin has found her job to be as interesting as she thought it would be, with every technology and every company requiring its own T2 approach. Looking forward, she is particularly excited about facilitating the commercialization of new clean technology.

"That will be very satisfying," she said.

Rebecca Mahurin, Director
Technology Transfer Office, MSU
tto.montana.edu

When Judy Chapman and Kathy Hildebrand first met, they felt an instant connection that went far beyond the good intentions of two busy professionals.

Both women own companies that provide support services for technology companies, both women rely heavily on networking to build their customer base, and both women are passionate about promoting the capabilities and potential of Billings' high-tech sector.

All of which lead to their founding of TecNet, a networking group designed to bring together people who work in technology.

"We started thinking about it last fall because we felt that Billings is under-perceived in the high-tech sector," said Chapman. "People who are involved in technology have a tendency to keep to themselves. They don't look for opportunities to network and they need to."

TecNet launched in early 2010 and has drawn people from Wyoming as well as Montana.

"I was amazed. People are definitely interested so I'm excited about how the group might grow," said Hildebrand.

TecNet's strong start reflects the extensive networking Hildebrand and Chapman have done on behalf of their own companies.

Hildebrand owns Arrow Solutions Group, which specializes in providing staffing for technology companies throughout Montana and in northern Wyoming. She started the company almost two years ago seeing a distinct need in the market for engineers, software developers and other technical workers to fill contract and permanent positions.

"It was a little bit of a risky venture to start a business in the middle of the recession, but it has turned out well," Hildebrand said. "I understand how to recruit to this market—quality of life is probably the biggest reason people come here. People are looking for work/life balance."

Chapman has been providing marketing and public relations services for several years in the Billings area. Her company, Brookstone Communications, now focuses on technology companies as well.

"We help our clients clarify their communications, whether verbal or written, and then help them communicate in a style that is true to their genre," Chapman said, adding that Hildebrand and she share a vision of how their companies and TecNet fit into the growth of the Billings area.

"We think that if we all give a little, we can all grow a lot... and in the long run, TecNet will be good for the entire community," Chapman concluded.

When Diane Smith visited northwestern Montana for a business meeting in 2002, she quickly became certain that this was where her family should be after living in Washington, D.C., for several years.

They had been searching for a more rural location for a while, and the Flathead region had everything they were looking for including a good communications structure, airport and school system.

But just as importantly, Smith was struck by the energy of the place.

"Montanans are enormously creative, hard working and game for trying something new," she said.

That attitude speaks to Smith's experience. A lawyer by training, she helped nurture the evolution of the telecom industry, working with Sprint and then Alltel as well as starting an industry alliance to advocate for independent companies prior to the 1996 Telecommunications Act.

Smith's first business in Montana was co-founding an IPTV startup that would grow into Avail Media, now the largest provider of video on demand and digital content in North America.

Currently she is co-founder and a principal of Northfork Strategies which consults with new Montana companies in such areas as business planning, legal strategies, capitalization and timing—for, as she says, in technology you die just as dead being early as you do being late.

Smith has never regretted her quick decision to move west.

"I'm such a believer in this state and the opportunities going forward," she said. "Entrepreneurship is to the 21st century what pioneering was to the 19th, and for that reason, Montana is the next great place for success." MTb&T

PEOPLE TO WATCH BY KRISTINE ELLIS

OUR FLOURISHING ENTREPRENEURIAL ECONOMY

Like the mist rising on the Flathead or Yellowstone Rivers, entrepreneurs and innovators are rising in Montana, despite the slow economy. They are young and old, male and female, natives and Montanans by love and luck. Make no mistake, big things are happening under Montana's big sky.

Artisans are building companies around beautiful hand made tiles like Kim Loftus http://www.kimloftustile.com/. Montana Hammer and Forge is beating foreign competitors at their own game by creating hand made wrought iron firescreens and other products in Eureka that are beautiful and price competitive.

Manufacturers like CleanWaste, www.gocleanwaste.com are producing proprietary products to manage human waste. S & K Electronics, www.skecorp.com continues to be one of the nations's most successful tribally owned, and entrepreneur led, enterprises. Employing 100 in Pablo Montana their customers include defense and electronics firms from all over the world. Montana entrepreneur founded Semitool, in Kalispell, was acquired this year by Applied Materials, www.appliedmaterials.com.

Technology entrepreneurs and innovators are connecting to build companies all over the state. Particularly robust corridors of IT businesses are blossoming in the western part of Montana. Collaborating with code writers internationally, companies like Goomzee, www.goomzee.com, Who Can Help www.whocanhelp.com and Avail Media (www.availmedia.com) are growing rapidly. The number of firms offering sophisticated eCommerce solutions and web design include Zane Ray Group www.zaneray.com. Snow Dog, www.snowdogweb.com, Bigfork Web Design, www.bigforkweb.com, Bozeman Web Design, www.bozemanwebdesign.com and New West www.newwest.net. So what's new about web designers in Montana? These firms are servicing clients all over the world and are competing on the cutting edge of ecommerce, digital marketing and brand building. Some of them have more work than they can do despite the deepest recession in 80 years.

Elke Govertsen from Missoula couldn't get financing for Mamalode because her husband's business got a loan first. She wasn't going to let a little thing like money hold her back! Rather than produce a prototype for her print magazine, she created a media kit and started selling something that did not yet exist. It worked! Her sales have increased 800 percent since May 2010, from $350 to $2,800 per month for the website alone. Print sales are also growing. Says Govertsen, "Apparently ad sales are still a good vehicle for growth if your readers are the market businesses want."

Entrepreneur Magazine 7-22-2010

The summer newsletter from the Montana Bio Science Alliance was robust with new life science companies. These represent highly skilled, well educated innovators building companies and finding solution to make our lives healthier and better. Companies like Sinapsis Pharma, www.sinapsis.com, Montana Molecular, www.montanamolecular.com, Bacterin, www.bacterin.com, Golden Helix, www.goldenhelix.com and Rocky Mountain Biologicals www.rmbl.org are growing out of research and intellectual and science capacity at Montana's wonderful universities.

New media enterprises like the equity backed Flathead Beacon, www.flatheadbeacon.com, Mamma Lode, www.mammalode.com, MATR, www.matr.org are reaching markets from Montana to Mongolia.

The pioneering work in innovation and entrepreneurship began in Montana long ago, The difference today is that innovators and entrepreneurs are beginning to do more than survive; they are succeeding at profit, improving lives and keeping our beautiful landscape in tact. This is just the tip of the mountain top in what is going on in Montana today.

There is a reason Montana is ranked #1 in Entrepreneurship. There is no business penalty for living in paradise. Smart, talented, creative, hardworking innovators and entrepreneurs are making Montana the place of choice.

Thank you to the founders of companies like Printing for Less, www.printingforless.com, Right Now Technologies, www.rightnow.com and Semitool for leading the way in Montana in enterprise. (Stay tuned, there is more to come particularly in clean energy and food.)

Initiatives supporting innovation and entrepreneurs in Montana:

Bootstrap Montana	www.bootstrapmontana.org
Montana Angel Network	www.montanaangelnetwork.net
Frontier Angel Fund, LLC	www.frontierangel.com
Big Sky Angels	www.bigskyangels.com
Tech Ranch	www.techranch.org
Montana Bioscience Alliance	www.montanabio.org
Rocky Mountains Super Computer	www.rmic.org
Montana Clean Tech Alliance	(website under construction)
Montana World Trade Center	www.mwtc.org
Montana Academy of Distinguished Entrepreneurs	www.business.umt.edu/made/
Hellgate Venture Network	

BY LIZ MARCHI, MONTANA ANGEL NETWORK

MONTANA'S ECONOMIC DEVELOPMENT REPORT CARD!

As a result of a good economy and sound fiscal management by the Governor, Montana is one of only two state governments operating "in the black". *(Center on Budget & Policy Priorities, Time Magazine)*

Montana fares well in *Business Facilities* magazine's most recent State Rankings:

- Overall business climate — **8th**
- Best overall tax climate for business — **6th**
- Best sales tax climate for business — **3rd**
- Quality of life — **8th**
- Cost of Labor (includes productivity) — **6th**
- Most educated workforce — **4th**
- *Forbes* magazine rates Montana as the "fastest climber" as Most Business Friendly State in the nation, going from **42nd to 24th to 13th!**
- US Department of Commerce & US Chamber of Commerce Foundation rate Montana as the **#1 state** for entrepreneurship and **overall business start-up** activity. (Montana also received a similar ranking from the Kauffman Foundation.)
- *Business Facilities* magazine listed Montana as **2009 runner-up** for Economic Development **State of the Year.**
- *Trade & Industry Development Magazine* awarded Montana the **Corporate Investment and Community Impact Award for both 2009 and 2010.**

Montana's economic statistics are strong:

- Montana is one of the **fastest growing economies (8th)** in America over the last 3 years
- Montana's **economy grew 65%** over last 10 years (gross state product increase)
- Montana scored **2nd best** in economic performance according to the 2010 ALEC-Laffer State Economic Competitiveness Index
- Montana has the **11th lowest** unemployment rate in the nation (7.1% which is 2.8% below the National average – 9.9% federally)

Montana's taxation rankings from the Tax Foundation are good:

- Montana ranks **6th best** on list of tax-friendly states (state business tax climate rankings)
- Montana is the **8th best** in combined state and local tax burden
- Montana is the **3rd best** in sales taxes for business
- Montana is the **10th best** in property tax index

Montana energy development drives the Montana economy – including these significant increases in various forms of energy production:

- Montana is the **fastest growing state** in nation in oil production (only other state growing is North Dakota)
- Montana is **2nd in the nation** with growth in coal production – up 13% since 1/1/2005
- **First new coal mine** in 29 years – Signal Peak ($475 M Investment – 235 good jobs)
- **#1 in wind power growth** – from 1 MW to 386MW (from 50th to 18th) among states with at least 250MW
- Montana developed **more new electrical generation** capacity since 1/1/2005 than the previous 20 years combined

Montana had record job growth – at record high wages

- **60,000 private sector jobs** created between 1/1/2005 and 10/28/2008
- Job creation 3 of last 4 months – **1489** last month alone
- Real state government job growth has been kept to less than **1/4 of 1% per year** over the last 10 years

**Data as of June 17, 2010*

BY KRISTINE ELLIS

MSU Spinoff Positioned to Revolutionize Metrology and Imaging Industry

BOZEMAN—Four years after spinning off from Montana State University's Spectrum Lab, Bridger Photonics is poised to cut a wide swath through the precision metrology and imaging industry with two ground-breaking technologies.

The company's precision laser detection and ranging (LADAR) system offers higher resolution than anything on the market over greater distances, while its light detection and ranging (LIDAR) sensor is the most compact yet powerful available. Applications range from identifying sources of pollution and illicit drug use to aiding the warfighter in the field and improving manufacturing processes.

"Both technologies are now close to full commercialization," said Peter Roos, president and CEO, Bridger Photonics.

Roos founded the company in 2006 with Randy Reibel, vice president and COO, and Jay Brasseur, now a technical advisor for Bridger Photonics and an executive of a Colorado-based tech company. The three were MSU graduate school colleagues who returned to the university to work at Spectrum Lab.

The Spectrum Lab was established in 1999, under both the Department of Engineering and the College of Letters and Science, to advance and transfer MSU technologies to Montana companies. Its current director is Zeb Barber.

"The Bridger Photonics spinoff has been a major success, the best we could have hoped for," said Randy Babbitt, an MSU professor and director of the Spectrum Lab from 2002 to 2010. "Not only is the company able to hire Montanas, it's brought significant federal money into Montana and is producing products."

Since 2006 Bridger Photonics has won more than $2 million in grant and contract funding through the Small Business Technology Transfer (STTR) program, the Montana Board of Research and Commercialization Technology program and several other federal and industrial funding sources.

Now at 13 employees, the majority MSU graduates, Bridger Photonics' goal is to be a $20 million company with an employee base of about 65 people within 10 years.

"Although we have been primarily grant funded, by next year we expect that to start to change significantly," Roos said The company is now negotiating the first volume order for a subsystem of its LIDAR sensor.

It was this technology that launched the startup. The company won a $150,000 STTR Phase I grant in 2006 to partner with Spectrum Lab in developing remote sensing devices that were low cost, highly sensitive and portable to be used to detect chemical byproducts of methamphetamine from a distance.

The technology is also a potential solution for measuring and pinpointing the location of elevated carbon dioxide emissions, a significant contributor to climate change. Currently monitoring and measurement of these emissions requires on-site sampling.

The company's LADAR system has also drawn significant interest.

"Our system can measure distance to within 1/1000 of a human hair, so it is extremely precise and of interest to anyone who wants to measure something that is miles or even just feet away," said Roos.

For example, Bridger Photonics delivered a prototype earlier last fall for use by the Naval Research Lab for advanced research.

It also has SBIR Phase II funding to advance the technology for Naval Air Systems Command to provide helicopters with accurate 3D imaging of landing zones in zero-visibility conditions.

Closer to home, the Kalispell, Mont., based WaveSource is interested in using the LADAR system in its custom manufacturing of multi-focal contact lenses, a measurement process now under development in the Spectrum Lab.

Bridger Photonics and Spectrum Lab continue to collaborate on specific research, a relationship Roos assumes will continue.

"Right now we are focused on commercialization, but when we begin to push on R&D again, I imagine that collaboration will grow again. It is a great relationship," he said.

Babbitt concurs.

"The lab was established specifically to support successful spinoffs such as Bridger Photonics. We collaborate with several Montana companies It's good for the lab, it's good for the companies, and it's good for Montana's economy," said Babbitt. MTb&T

Refraction of waves of photons (light) by a prism

The science of photonics includes the generation, emission, transmission, modulation, signal processing, switching, amplification, detection and sensing of light. The term photonics thereby emphasizes that photons are neither particles nor waves — they are different in that they have both particle and wave nature. It covers all technical applications of light over the whole spectrum from ultraviolet over the visible to the near-, mid- and far-infrared. Most applications, however, are in the range of the visible and near infrared light. The term photonics developed as an outgrowth of the first practical semiconductor light emitters invented in the early 1960s and optical fibers developed in the 1970s.

Bright Companies Under the Big Sky

Brightsun Technologies®

Brightsun Technologies®

brightsuntech.com

Innovative software gives personal litigation professionals fast access to research-based medical evidence

BILLINGS—Brightsun Technologies entered the personal litigation market last fall with FormPro® software designed to help forecast the long-term needs of people who suffer catastrophic injury.

The software package includes injury-specific content, research references, forms and other tools needed by attorneys, medical personal, life care planners and others involved in injury litigation.

"FormPro will help busy professionals avoid errors and omissions when considering the lifetime treatment needs of those who are seriously injured. It also saves them a tremendous amount of time," said Dave Stoltenberg, COO. "We estimate that FormPro saves users 150 to 250 hours a year."

The software opens a new market for Brightsun, which is known for its data management software for human services. The company's Extended Employment software platform, for example, is used by State of Montana and State of Idaho program administrators to manage extended employment of people with disabilities.

"When we first started working with Montana in this area in 2001, everything was done on paper. Now it is a 95 percent paperless, web-based system. The administrators can go online at any time and see how many participants are in the program and their status," Stoltenberg said.

Brightsun was founded by Reg Gibbs, CEO, who is a certified life care planner and rehabilitation counselor. Gibbs is often called as an expert witness in catastrophic injury cases, and it is that kind of expertise, says Stoltenberg, that gives the company its competitive advantage.

"All of our content is verified and continuously updated," he said.

Stoltenberg and Gibbs met in the mid-1990s when Brightsun was a client of the Montana Business Incubator, located on the campus of Montana State University, Billings. At the time, Stoltenberg was MBI's executive director and he worked closely with Gibbs to move Brightsun through its startup evolutions.

When Stoltenberg joined Brightsun in 2008, the company's first priority was to move FormPro out of development and onto the market. The company also has two more products in development for the personal injury litigation market that are planned for release within the next several months.

"This market has the potential to increase exponentially for us," Stoltenberg said.

In the meantime, the human services data management revenue has provided stable revenue and steady growth even during the recession.

To take the company to the next level, Gibbs and Stoltenberg initiated a Small Corporate Offering Registration earlier this year.

Huls Dairy, Inc.

hulsdairy.com

Advanced technologies making the difference for farm-based energy generation

CORVALLIS—Two years after installing an anaerobic digester to transform tons of cow manure into value-added product, Huls Dairy finds itself in a situation similar to other early adopters of new technology—while not yet perfect, it's clear that the technology will live up to its promise.

The digester turns manure into biogas for energy generation, liquid fertilizer for field application and solid compost for lawns and gardens.

"The technology is ever-evolving and there are some new ideas about how best to do it, particularly in the more northern climates, but I think its the coming thing as far as environmentally sound waste management. And its potential for farm-based energy generation will only get better," said Dan Huls, one of four brothers who, with their wives, are the fourth generation to run the family business.

Huls Dairy is the first Montana agricultural operation to try methane digestion.

The family began exploring the technology a few years ago as a means to control odor. The more the family learned about methane digestion, the more interested they became.

They worked with several partners to get their system up and running, including the Northern Rocky Mountain Resource Conservation and Development Council, Natural Resource and Conservation Service, Ravalli and Gallatin Counties Extension Services and the Montana Community Development Corp.

"We've also gotten tremendous support from our utility company, Ravalli Electric Cooperative, said Tim Huls.

Huls' methane digester currently produces electricity for the dairy and some of its neighbors. In addition, the Huls are marketing their compost as Afterburner Boost, selling it by bulk and bag. After testing it locally this year, the family plans to expand its market throughout Montana as well as into Washington, Oregon and Idaho in 2011.

In the meantime, they continue to modify the digester as needed. For example, they may incorporate a scrubber to rid the system of the hydrogen sulfite gas that corrodes the components.

These and other challenges weren't unexpected.

"We are on the leading edge of this technology so this is a laboratory of sorts. At some point, we hope that our operation will be a blueprint for how to do energy production on the farm or at any animal confinement operation," Tim said.

The Huls currently milk 370 cows, supported by a herd of 850 to 900 ranging from calves to adults and every age in-between. In addition to pasture, they grow hay, corn and barley on 600 acres.

For it's leading edge work, Huls Dairy was the Regional Finalist for the U.S. Chamber of Commerce 2010 'Dream Big' Small Business Award and was the only agricultural business among the 70 finalists and the only Montana company. It was also named the 2009 Montana Ambassador Entrepreneur of the Year.

Bright Companies Under the Big Sky continued

McKinstry

mckinstry.com

Green building growing jobs in Montana

MISSOULA—McKinstry has been going great guns since opening a satellite office in Montana last fall, completing energy efficiency projects for school districts, municipalities and others, with even bigger plans in the works.

"We are in the midst of feasibility studies for some pretty substantial biomass projects that we hope to be able to announce by late fall," said Tim Tolman, business development manager for McKinstry in Montana.

In the meantime, the company is making a big impact with its smaller projects.

Several school districts, the University of Montana, Montana State University, the City of Billings and the Montana Department of Transportation will all be seeing improved energy efficiency in their facilities by working with McKinstry.

The company begins with a detailed energy audit examining everything from each light bulb to the heating and ventilation systems and water supply. Three years of the client's monthly energy bills are also analyzed.

The data is then entered into a computer simulation program.

"We actually build a virtual model of the building which tells us exactly how much energy is being used by each system. Knowing this usage we can project exact savings per each upgrade we do," said Tolman.

Staff then sit down with the client and go through an itemized list of recommendations for making the building more energy efficient, ensuring that the upgrade costs are covered by the savings in energy costs.

For example, if McKinstry is able to identify energy cost-savings of $10,000 a year, those savings can be used to finance a $100,000 project over ten years.

McKinstry is so certain of the accuracy its audit and recommended upgrades that it will guaranteed those savings.

"If we've guarantee $100,000 in savings and the client saw $90,000, we'll write them a $10,000 check," Tolman said.

One of about a dozen energy services performance contractors in Montana, McKinstry differentiates itself in several ways, but Tolman is particularly proud of the company's commitment to provide good jobs for Montanans. By the end of 2010, McKinstry projects will have put nearly 100 contractors to work.

"We don't bring in out-of-state contractors. All of our design and construction is done by Montana contractors," he said.

Headquartered in Seattle, Washington, McKinstry has a staff of 12 in Montana, with offices in Missoula and Bozeman. The company also has several interns from the state universities working for them as prospective full-time employees.

"The interns have really been a help. We put them through a tough interview process because we hope that once they graduate they will come and work for us," Tolman said.

TerraEchos Inc.

terraechos.com

Powerful sensor system offers a new way to secure critical infrastructure

MISSOULA—Covert intelligence and surveillance systems developer TerraEchos Inc. continues to move closer to full commercialization of its Adelos S4 Sensor Array, a system with the potential to transform how the nation's critical infrastructure and inland borders will be monitored and secured.

"The Adelos system is proving to be one of the most valuable pieces of technology available for addressing very challenging security problems, not just for the federal government but for the private sector as well," said Alex Philp, president and CEO, TerraEchos.

Adelos combines two powerful technologies. The system's advanced fiber-optic sensor technology gathers and analyzes real-time acoustic data that is then processed by InfoSphere Streams, IBM technology licensed by TerraEchos last winter.

About 1,600 megabytes of motion data per second can be gathered by Adelos, which can be buried underground or installed underwater, resulting in instantaneous reporting of security breaches, equipment breakdown and other potential risks.

Development began back in 2005 when GCS Research licensed the sensor technology from the Navy. Philp, who founded GCS in 2002, spun off TerraEchos in 2006 to move the technology into commercialization.

Initially funded by GCS and a handful of small grants, TerraEchos was awarded a two-year Montana Board of Research and Commercialization Technology grant in 2007.

"We owe that program a lot," Philp said. "We received $200,000 the first year, and then based on our performance, $200,000 the second."

Also instrumental in the company's success was its early partnership with S&K Electronics, of Pablo, which helped design and manufacture the prototype.

That relationship in turn led to the June 2009 purchase of GCS's controlling interest in TerraEchos by S&K Technologies, a federally chartered corporation owned by the Confederated Salish and Kootenai Tribes.

"This was very important. It allowed TerraEchos to raise funds by selling stock and allowed S&K Technologies to expand its portfolio into the security market," Philp said.

Although Adelos is still in development and not yet available for commercial use, TerraEchos received Department of Defense funding in 2009 to continue its testing and evaluation, as well as a commitment from the government for a minimum of two more prototype units.

Currently TerraEchos has a staff of five. Philp earned both his masters and doctorate at the University of Montana and is committed to remaining in the state.

"We hope to continue to grow the business here and demonstrate that Montana is a good place for advanced research and development," he said. MTb&T

COMPANIES ON THE MOVE BY KRISTINE ELLIS

BY CHANTEL MCCORMICK
VICE PRESIDENT
GRASSLANDS RENEWABLE ENERGY

Empowering Communities through Wind Energy

Travel to just about anywhere in Montana and you will immediately understand why we say "Montana is Wind Country."

The Treasure State leads the nation in wind energy power potential and is at the center of North America's wind heartland. Wind energy is clean and renewable and provides the green complement to Montana's traditional energy resources. Much of the state's wind has yet to be tapped, but interest in this emerging industry continues to grow at a rapid rate.

Governor Brian Schweitzer has made energy development one of his top economic development priorities and since 2005, the state has seen an increase in wind energy production from less than 1 megawatt to nearly 400 megawatts. While the majority of that growth has been in large commercial sized projects, less attention has been paid to economic development opportunities that are presenting themselves through the increase in proposed community wind projects.

Definitions for "community wind" vary, but an important common theme is local ownership. A community wind project benefits a local area in many ways in addition to lease payments to landowners and tax revenue to governments. Community-based projects differ significantly from traditional models of wind development. First, local communities play a significant role in decision-making and goal setting for the project. Secondly, landowners can not only get turbine leases, but also have the opportunity to join the project as part owners via investment of their wind rights or money.

Community wind projects can vary in size but typically generate less than 50 megawatts of electricity – enough to power about 15,000 homes. Generally, that electricity serves consumers within the local community which can result in competitive prices and keep more money circulating through the local economy.

The economic benefits of wind energy are considerable. New, high-wage jobs combined with an expanded tax base provide opportunities for many areas traditionally affected by economic dislocation. In these cases, wind energy development is highly sought after by landowners, farmers, and ranchers. Projects of this nature can also provide local residents with a deeper sense of community involvement. Area residents have a unique opportunity to build, own, operate, and profit from renewable energy sources found in their own backyards.

Recently, several new community wind projects in Montana have been announced in the southwest and central regions where wind speeds are consistently recorded at around 18 miles per hour. Most residents of these areas strongly support harnessing this resource for their own use.

"In our area, landowners are generally farmers," says Sam Korsmoe, Director of the Madison County Economic Development Council. "Any time a farmer can get more use of their land, it's a huge benefit."

At least three private, independent companies are looking at the Norris Hill area near Ennis as an ideal location for community wind projects.

"Madison County can be known as a place where community wind can work," Korsmoe added. "We need this kind of economic diversification. For so long, we have been looking at Big Sky as the savior of our local economy. We don't want to have all of our eggs in one basket and with three or four wind projects operating, that will help counterbalance revenues generated from development in Big Sky."

Probably the state's largest opportunity for community wind projects lies with Judith Highlands Energy, who has proposed a series of wind farms throughout several central Montana counties. The proposed projects are larger than other community-based projects, but the model used by Judith Highlands includes much more local ownership.

"The landowner has the opportunity to participate in the sale of electricity, on top of wind turbine and land payments," says CEO Rhyno Stinchfield. "That's what, in our minds, makes this truly a community project."

As additional incentives, Judith Highlands encourages landowners to participate in the local advisory board established to help facilitate the development and also creates a profit-sharing opportunities through various investment options.

"That's what . . . makes this truly a community project."

Rhyno Stinchfield, CEO, Judith Highlands Energy

"We pride ourselves on our commitment to open, two-way communication with the whole community that will help us build the best wind project possible," Stinchfield says. The projects, when completed over the next five to eight years, could total 500 megawatts.

The primary energy focus of the Schweitzer administration has been to secure a sustainable, reliable and affordable energy future for communities, and to foster economic growth from energy development throughout the state. Wind energy development can empower communities through innovative development models while protecting and maintaining the quality of life so many Montanan's treasure. MTb&T

Montana is growing and so is support for business

At the Montana Department of Commerce, we know Montana means business. We are committed to the state's innovative vision for economic prosperity and have the resources and the experience to identify the economic needs of our communities and businesses, large and small. We have the tools to help new businesses start from scratch, and we can help established businesses expand to reach their full potential. We believe good paying jobs and a highly skilled workforce are the keys to achieving economic prosperity in every corner of this great state. We know business; we grow business; we mean business.

Dore Schwinden
Department of Commerce, Director

Please contact the Montana Department of Commerce to see if your company qualifies and could benefit from our programs.

"Under the guidance of Governor Brian Schweitzer, the Montana Department of Commerce has helped businesses create thousands of new jobs across the state," said Director, Dore Schwinden. "Programs that help spark economic development are incredibly valuable to Montana's business community."

Funding Montana's Future

- *Primary Sector Workforce Training Grant Program*
- *Community Development Block Grants*
- *Board of Investments Finance Programs*
- *Big Sky Trust Fund*
- *Indian Country Economic Development*
- *Facility Finance Authority*
- *Micro-Business Loans*

Montana Department of Commerce
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PO Box 200501,
Helena, MT 59620-0501
(406) 841-2700
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Dore Schwinden, Director

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PPL MONTANA

BY KRISTINE ELLIS

Renewable ABUNDANCE

CLEAN TECH TAPS MONTANA'S WEALTH OF RESOURCES

Rich veins of copper, silver and gold, vast reserves of coal, and miles and miles of fields and forest, all under the biggest blue sky you've ever seen—it's not for nothing that Montana is known as the Treasure State.

This abundant natural resource base has enticed innovators for longer than the state's been a state. Now the innovators are looking to leverage Montana's renewable resources for clean technology, which might just be the most promising treasure of all. There are many definitions of "clean tech." A succinct view is "new technology and related business models that offer competitive returns for investors and customers while providing solutions to global challenges." In Montana that translates into biofuels, wind farms, water treatment and more.

The state is taking steps to support this new sector via a package of tax incentives for new development. It is also gathering baseline workforce data to better forecast demand, and most recently, helped launch the Montana Clean Tech Alliance (see sidebar on page 34).

In the meantime, technology companies themselves are well under way in defining clean tech in the Treasure State.

Camelina provides Montana farmers with an alternative crop when they have to rotate from wheat AND is is suitable as a renewable biofuel.

The right elements

Earlier this year, a Harvard study put Montana second only to Texas when it comes to wind potential in the United States. That's a ranking Bill Alexander likes.

Alexander is chief development officer of NaturEner USA (naturener.net), which owns the largest wind farm in the state, the $500 million 210 megawatt (MW) Glacier Wind Farms northwest of Great Falls. The company will more than double that capacity by the end of 2012 with its next development, the $800 million Rim Rock Wind Farm, which will be north of Glacier Wind Farms and generate 309 MW of power. The two projects combined will have 346 turbines.

"We also have a couple of other projects in development in Montana," Alexander said.

NaturEner isn't the only wind company with projects on the drawing board. The potential for wind energy generation has many developers exploring proposals similar in size and scope to the Judith Highland Energy project on line for development in eastern Montana (see Community Wind story p.???).

The hold up for many is the lack of transmission availability, which is running behind demand all over the country.

NaturEner's Rim Rock Wind Farm is tied to completion of the Montana Alberta Tie Line (MATL) which will run from Great Falls to Lethbridge and have a 600 MW carrying capacity. Now that MATL is under construction, NaturEner expects to break ground on Rim Rock Wind in 2011.

Navy F/A Super Hornet fueled by biofuel made of a 50/50 blend of Sustainable Oils' biofuel and petroleum.

The U.S. Department of Energy forecasts that the cumulative benefit of 1000 MW of wind development in Montana would be $1.2 billion. Although only 373 MW of power are generated by wind in Montana, the many projects in the works will help Montana reach that milestone in the near future.

Communities that do have wind farms are already seeing significant return. For example, annual revenue from the Glacier Wind Farms runs about $2 million a year in property taxes, an $80,000 state energy tax and about $500,000 in landowner royalties.

At peak construction, the company employed 400 to 500 construction workers, many of whom moved their families to the area for the duration of the project. NaturEner contracts out operation and management of the wind farm, which requires a workforce of about 30 people.

"There will be some economy of scale, but these numbers will be close to what will be required for Rim Rock Wind," Alexander said.

Biofuel technology is another renewable energy alternative with a track record and big potential for Montana.

Sustainable Oils (susoils.com), for example, began supplying the military with camelina-based jet fuel for testing in late 2009. The Bozeman-based company targeted aviation fuels as a uniquely suitable avenue for demonstrating camelina's suitability as a renewable domestically-produced feedstock.

That became evident on Earth Day 2010 when a Navy F/A-18 Super Hornet hit 768 miles per hour fueled by a 50/50 fuel blend of Sustainable Oils' biofuel and petroleum.

"That was the first time a biofueled jet reached supersonic speeds," Scott Johnson, president of Sustainable Oils, adding that the company expects commercial orders for its biofuel by early 2011.

Camelina has been in the biofuel spotlight for awhile. Not only is it not a food crop, it doesn't require much water, and it can be a complementary product for wheat farmers.

"It provides Montana farmers with an alternative crop when they have to rotate from wheat. Rather than leave the land fallow, they can earn revenue," Johnson said.

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Sustainable Oils has the most extensive camelina research program in North America with breeding nurseries and a new research center in Montana, labs in Seattle and Saskatoon, Canada, and field testing sites in seven states and three provinces.

"Eighty percent of the cost of biofuel ultimately is going to come from the feedstock, so by improving the seed and making it more productive under the best growing protocols, we are ultimately reducing the cost of the fuel delivered to the end user," Johnson said.

Camelina will likely be the company's primary focus for the next five years, but Sustainable Oils is also looking at other crops that fit its energy fuel feedstock perimeters.

Dr. Tyler Smith (Director of Research & Development) speaking with Rivertop Founder, Dr. Don Kiely in the Rivertop lab

The right timing

Sustainable Oils located in Bozeman specifically to be in close proximity of Montana State University. Since opening in 2007 the company has funded about $250,000 in research at MSU.

Not surprisingly, many of Montana's clean tech businesses have been launched by state university researchers and graduates.

The Missoula-based Rivertop Renewables (rivertop.com), for example, launched in 2008 to commercialize three University of Montana (UM) patents developed and licensed by its founder Donald Kiely, retired UM professor emeritus of chemistry. Now on the cusp of full commercialization of its technology platform to produce renewable, biodegradable chemicals from plant sugars, including its first product glucarate acid, Rivertop brought in Jim Stoppert as CEO this year to push the company into high gear.

A 30-year veteran of the chemical industry, Stoppert's belief in clean technology stems from what he calls its double whammy.

"We can make a difference in the country's dependence on foreign oil, and we can make products that are very environmentally friendly and healthy. I truly believe it's the right thing to do and I want to be part of it. The timing is perfect," he said.

Rivertop's lead market includes detergent manufacturers that need an alternative for phosphate, which is being phased out and banned in the United States and other countries because of its harmful affect on water systems. Replacing the chemical with Rivertop's renewable glucaric acid will only require a change in formula.

"Because they don't have to change any equipment, it's a fairly quick start up. Globally, about 10 billions pounds of phosphate are used in detergents a year. So if we get just a fraction of that, it will be a good business," said Stoppert.

With potential customers soon ready to place orders, Rivertop will contract with chemical manufacturers and expects to be able to start filling orders next year. Plans for its own full-scale manufacturing plant are also in the works.

The Ripple Effect

In addition to the many companies working on clean energy and other "first-tier" technologies, clean tech creates opportunities for those along the supply chain as well.

For example, Native Seedsters of Billings (nativeseedsters.com), is developing a line of harvesters using patented counter-rotating brush and comb technology for better seed recovery of crops applicable for bioenergy but traditionally difficult to harvest due to seed barbs, hairs and other appendages.

To date the company has sold nine Seedsters to harvest switchgrass and miscanthus seed. It is now adapting Seedster technology to harvest camelina, wildflower seed and carrot seed.

Seedster research and development funding in recent years totals more than $1.3 million in U.S. Department of Agriculture Small SBIR grants and nearly $200,000 in grants from the Montana Board of Research and Commercialization Technology.

"We have also had excellent support from the Montana Manufacturing Extension Service and the Montana Department of Commerce," said Lee Arbuckle, inventor of the technology and a partner in the company with his wife, Maggie Arbuckle.

"We aim to produce a world class product," he said.

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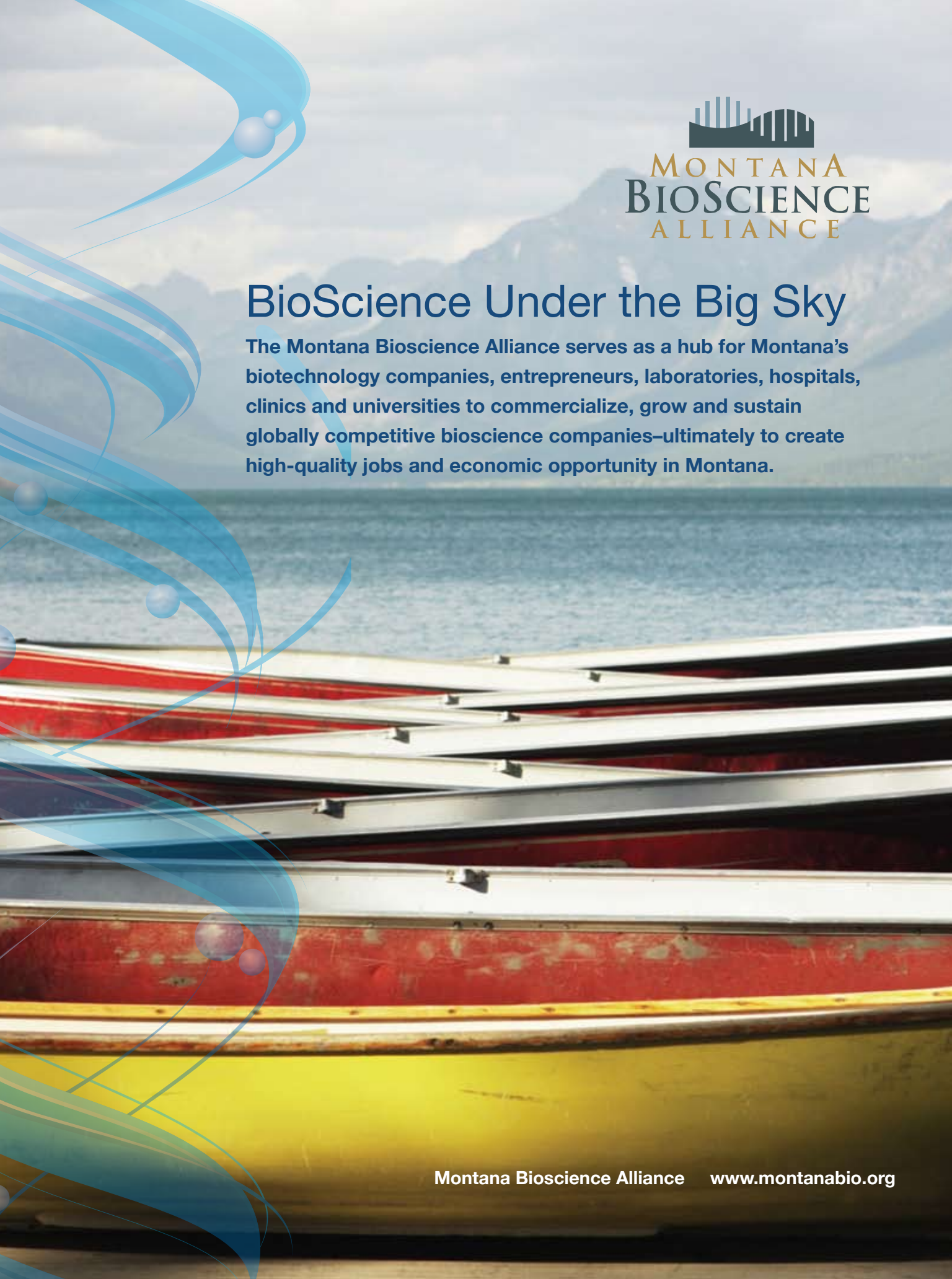

MONTANA
BIOSCIENCE
ALLIANCE
BioScience Under the Big Sky
The Montana Bioscience Alliance serves as a hub for Montana's biotechnology companies, entrepreneurs, laboratories, hospitals, clinics and universities to commercialize, grow and sustain globally competitive bioscience companies–ultimately to create high-quality jobs and economic opportunity in Montana.
Montana Bioscience Alliance
www.montanabio.org

Research Chemist Dan Shirley conducts experiments using Rivertop's polymer platform, as CEO Jim Stoppert & VP of Marketing Jason Kiely meet in the background.

Although the location is yet unknown, it is unlikely that the company's first full-scale location will be in Montana. Currently, Rivertop feedstock is primarily corn, but as Stoppert says, the company is "feedstock agnostic" and will locate its plant near the right biorefinery when the time comes.

Wherever the plant ends up, Rivertop's headquarters and research facility will remain in Missoula.

"We will be making large investments in pilot and research equipment here, and are already hiring more staff. We are at about 10 people, and I hope to double that by this time next year," Stoppert said.

AlgEvolve (algevolve.com) is another clean tech company with ties to UM. With offices in Missoula and Corvallis, AlgEvolve was founded in 2006 by UM graduates who worked hard to find a way to advance technology in their own backyards.

Clean tech opened the door.

"We believe that great people, great processes and a willingness to take calculated risks are at the heart of building a long-term business. We benefit from the overlap of that approach and the mindset, education and skill level of the people of Montana. It's a natural and consistent fit," said Jordan Lind, AlgEvolve COO and co-founder.

AlgEvolve's advanced, algae-based, water treatment technology integrates with industrial and municipal wastewater treatment systems using algae as a filter to remove harmful nutrients that damage water ecosystems. The company uses algae it grows in a controlled environment.

"The primary challenge facing water treatment systems today is the ability to remove primarily nitrogen and phosphorus prior to discharge. These nutrients result in algae blooms in our rivers, lakes and streams which take oxygen away from fish and plant life and therefore harm the water ecosystem." said Lind.

AlgEvolve's solution moves the problem—algae blooms—and upstream into a controlled water treatment process. The end result is cleaner water, cleaner air and a valuable algae byproduct for use in developing downstream markets.

AlgEvolve has two pilot installations and a third will launch late this fall. Because it can sell into multiple vertical markets, its economic potential is significant. In the United States alone, the nonchemical-based water treatment market is a $5 billion market.

"We are a group of third and fourth generation Montanans who see ourselves as high tech farmers with an exciting opportunity to clean water and mitigate industrial carbon footprints. What we do is purposeful and, if we are right on this business, has significant implications for the people and state of Montana," said Lind. MTb&T

MONTANA CLEAN TECHNOLOGY ALLIANCE TO HOST SUMMIT

Leveraging a broad cross-section of state, academic and private sector expertise, the recently formed Montana Clean Technology Alliance brings together key stakeholders to network; share best practices, challenges and resources; and foster innovation and economic development around clean technology.

"The Alliance is a tremendous opportunity for a diversified group of people to create a vision of what clean technology can do to stimulate economic growth in Montana," said Jordan Lind, COO of AlgEvolve and an Alliance member. "It's a tremendous challenge and one that requires the right political, economic and social framework to make a material impact."

In addition to several private-companies, members include the Governor's Office, Department of Commerce Energy Promotion Office, Bitterroot Economic Development District, Montana World Trade Center, The Biomimicry Group, the Montana Angel Network, the Montana BioScience Alliance and university technology transfer experts.

The Alliance is planning a Clean Tech Summit in the Spring of 2011 at Big Sky, Montana, that will feature national and local thought leaders in green technology, sustainability, finance and innovation. **For more information, visit www.montanacleantech.org.**

About Innovate Montana

Innovatemontana.com offers a unique web portal uniting Montana's innovative economies providing information and resources for working, living and playing in Montana. It is a private-public partnership between industry and the Governor's Office of Economic Development focusing on businesses and entrepreneurs who want to invest in Montana's growing economy.

Highlights from the site include:

- Montana's business friendly climate and #1 ranking for entrepreneurial activity by the U.S. Chamber of Commerce and the Kauffman Foundation
- Recent developments in Montana's major industry clusters and emerging high tech economy
- Featured entrepreneurs and innovative companies who have achieved global recognition while living their dream in Montana
- Links to the abundant cultural and recreational activities available in communities across the state
- Information on Montana's K-12 education system and the Montana University System

As the site evolves, it will be updated frequently and include news and information on the latest trends in Montana's economic growth and quality employment opportunities in the state.

Check us out. To become engaged in this venture or for further information please contact melanie@innovatemontana.com

Montana Technology Innovation Services

FOR MONTANA'S EMERGING TECHNOLOGY INDUSTRY

DO YOU QUALIFY FOR FREE SERVICES?

If you are a Montana-based technology business owner/entrepreneur or researcher, serious about moving your technology through the innovation and development processes to achieve full commercialization, then you are eligible for Montana Technology Innovation Partnership's (MTIP) free counseling services. We want to help you succeed in Montana!

MTIP OBJECTIVES

MTIP was created by the MT Department of Commerce several years ago with a mission to convert the short-term benefits of technology research and development into long-term rewards of economic development. MTIP is driven by the following objectives:

- To emphasize commercialization as the ultimate success in technology research and development;
- To deliver individualized, results-oriented consulting to Montana's innovators;
- To provide unique educational opportunities, specifically targeting Montana technology interests;
- To provide rapid access to appropriate innovation, business, financial, and university resources throughout the state and the nation;
- To complement, not duplicate the services of others service providers

MTIP COUNSELING

MTIP is pleased to offer Montana's technology entrepreneurs and researchers, free access to knowledgeable, experienced technology coaches with more than 50 years combined experience in this arena. The coaches work with MTIP clients to assess the status of each technology to determine (a) stage of development; (b) commitment and determination of the client to succeed; (c) the technical, business and financial resources available for pushing the technology forward, and (d) deliver the needed assistance or identify other available resources. MTIP coaching includes guidance in the following areas:

- Identifying and assessing potential technology-focused funding opportunities;
- Confidential, individualized coaching to develop and submit highly competitive proposals in response to appropriate opportunities; while MTIP's coaches cannot write your proposal for you, they will be available to ensure you understand the proposal requirements of all 11 federal agencies, and other elements required to ensure you submit the best possible presentation;
- Understanding the complex issues of intellectual property, federal grants, contracts and governmental accounting;
- Understanding how to conduct the necessary market research needed to support your chosen commercialization approach;
- Identifying and accessing sources of technologies available for licensing;
- Guidance to other available resources available to Montana technology businesses at state, regional and national levels.

COMMERCIALIZATION – THE ULTIMATE TARGET

Commercialization is the process of moving a technology from a mere idea to the marketplace. There are several different paths you can take to reach successful commercialization:

- Venturing – Building your business around the production, assembly, sale and distribution of your technology;
- Partnering – Sharing parts of your venturing strategy with one or more additional partners who may be, and often are, already established in the industry;
- Licensing – Selling only selected rights in your technology to others, usually in exchange for negotiated and ongoing payments;
- Full Sale – Selling all the rights to the technology to others, with no expectation of future revenues beyond those received at the time of ownership transfer.

continued next page

MTIP's initial interview session with a coach will lead to specific recommendations tailored to your situation and needs, but with specific steps you will be required to complete to move forward. Your effort and commitment in responding to these recommendations will determine the level and amount of additional assistance MTIP will provide your venture.

Call us today at 406-841-2749 or visit our website: www.mtip.mt.gov to complete our "Request for Services" intake form. As stated at the outset, we want to help you succeed in Montana!

BY MARY MCMAHON
MTIP PROGRAM MANAGER
MONTANA DEPARTMENT OF COMMERCE

Building your business through exports . . .
and we are not just talking about Canada!

Exports of Montana products have doubled in the past decade to some $1.5 billion. This presents a significant opportunity for Montana companies, particularly small firms, looking to grow and develop new market share.

An estimated 823 Montana businesses, employing close to 10,000 individuals are currently classified as exporters. Over 87% of these companies are small and medium-sized companies with less than 500 employees. These companies mainly export manufactured products. In fact, the latest statistics indicate that manufactured goods represented nearly 4 out of every 10 products exported, while agricultural products comprised 30% and mining 9%.

Selling overseas requires more than just looking for potential distributors online or hopping on a plane to seek new markets or attend trade shows. One of the greatest challenges for companies new to exporting, or companies expanding their global presence, is qualifying market opportunities and countries for distribution. The Montana World Trade Center, a program of The University of Montana, has provided the following tips and insights to Montana businesses looking to enter or expand in the global marketplace. The advice is based on 25 years of experience and offers insight into creating a successful international market development strategy.

1) The U.S. is a transactional society based on transparency and rule of law. For the rest of the world, in most circumstances, business is based on relationships.
2) It takes time to build relationships. You can start on the internet, but eventually if you want to have trustworthy and valued partners, customers, distributors, agents, and vendors, you'll want to meet face to face and to get to know them on a business and personal level.
3) Everything takes longer. No matter how well you plan, how persistent you are and how persuasive you THINK you are it will take longer, particularly the further away you are from the customer.
4) Most significant actions take place in person. If you want to make something happen, you will have to go to the customer or have them visit you.
5) Foreign partners often have different goals for projects and ventures. You might be in it for the profit and just assume that's what they want too. That may not always be the case. Often foreign investors are more interested in market share and establishing a larger presence or alternatively, having a separate entity to run expenses through.
6) You must have in-country assistance that is reliable and trustworthy. Knowing the language doesn't mean you know the lay of the land.
7) Governments play a much greater role in business in most other countries. Understand the do's and don'ts of negotiating and working with government officials.

Exporting presents a new set of challenges but Montana companies and producers have several resources available to help navigate the steep learning curve and complexities of the global marketplace. Whether you need help identifying exporting opportunities, would like training or to take part in educational seminars, need travel and marketing resources, or require assistance with something as specific as a Schedule B code, these organizations are here to help your company "Take Montana to the World".

Montana World Trade Center	Nicole Hagerman	406-243-6982
Montana Dept. of Commerce Office of Trade & International Relations	Sara Warren	406-841-2754
U.S. Commercial Service, Export Assistance Center	Carey Hester	406-370-0097

BY NICOLE HAGERMAN
PROJECT MANAGER
MONTANA WORLD TRADE CENTER

MONTANA STATE UNIVERSITY

Revolutionary Research Discoveries

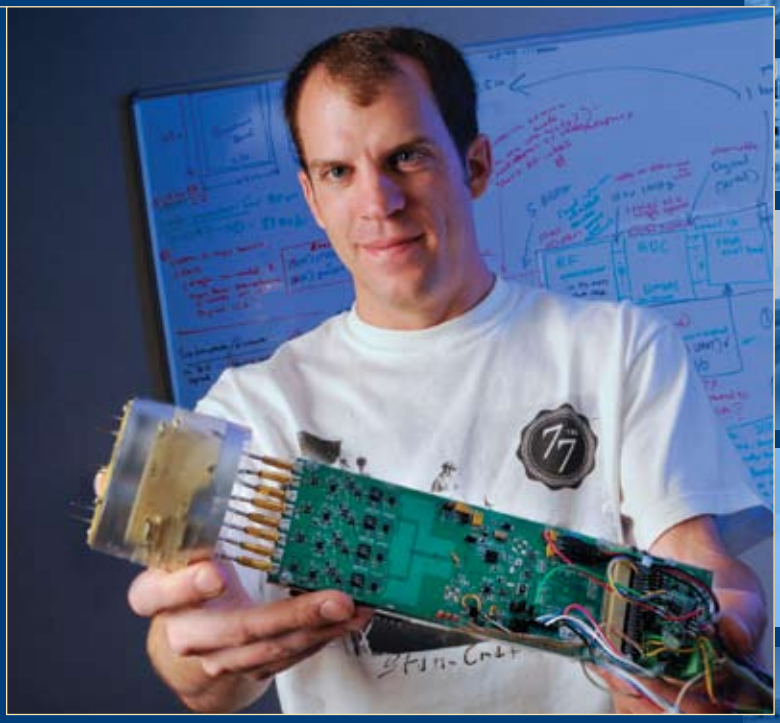
Research at MSU has produced more than 190 active technology licenses and 105 patents have been issued for MSU discoveries.

Better rural, emergency and defense communication

Problem: Unreliable communication in remote regions and rugged terrain

Project: MSU researchers and students in electrical and computer engineering collaborated with industry partners to develop a new antenna capable of finding the strongest available signal, adapting to the environment and optimizing transmission.

Solution: A new antenna that provides users a stronger, more reliable signal enabling better communication in rugged terrain while on the move. Emergency workers from firefighters and ambulance teams to defense personnel overseas need reliable communication, which can help save lives.



MSU conducts world-class research in areas such as energy, biotechnology, optics and the environment. To find out more about MSU's technologies go to **http://tto.montana.edu** or contact the MSU Technology Transfer Office at **tto@montana.edu.**

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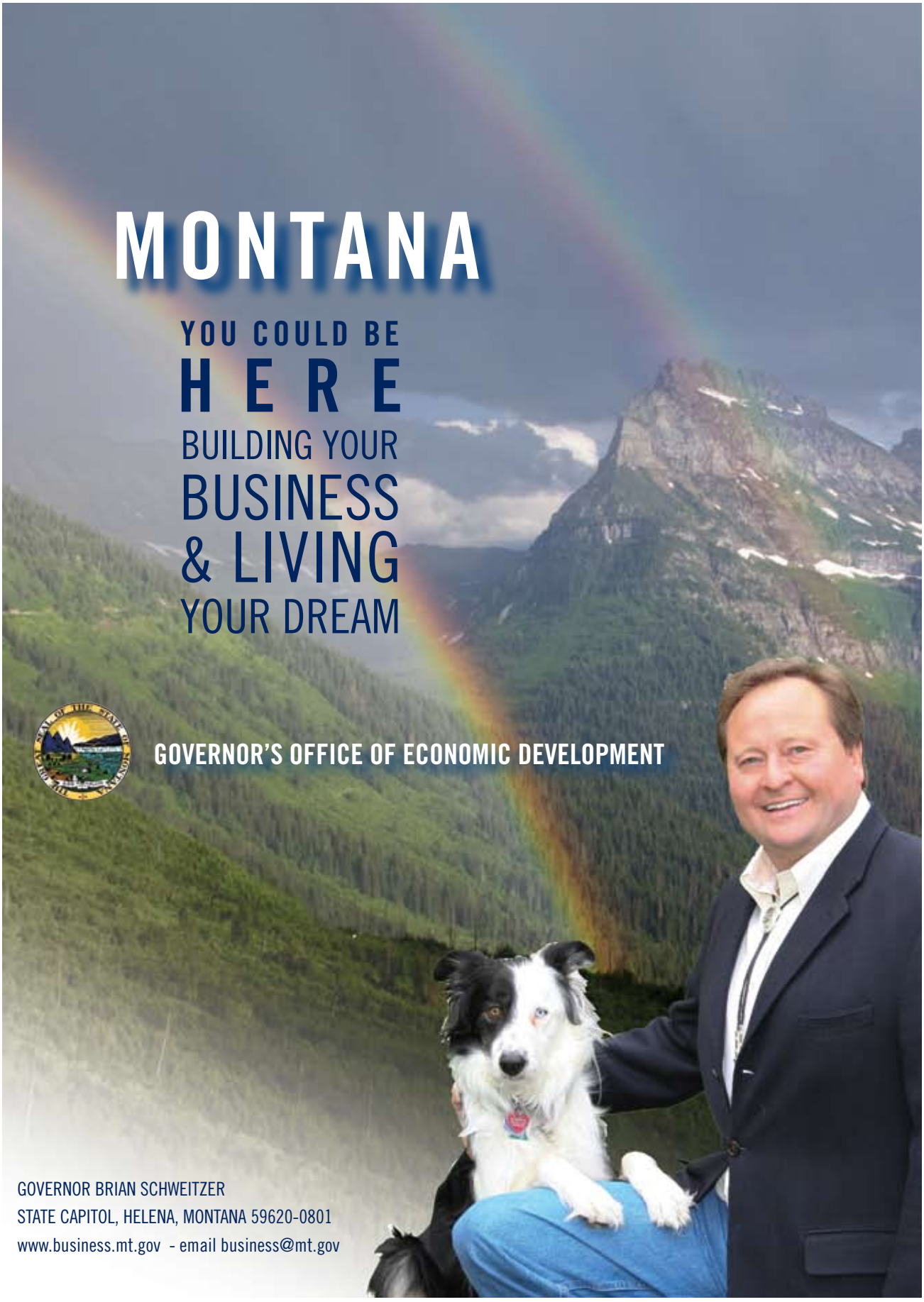
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